

WHAT IS CLAIMED IS:

1. A wave-transmitting cover mounted in an opening of an exterior member of a vehicle, wherein a wave radar is disposed on a back side of the cover, comprising:

5 a transparent resin layer exposed on an outer surface of the cover;

a base layer spaced from the transparent resin layer;

and

10 a decorative layer laminated in a space between the transparent resin layer and the base layer to display a design thereon on the outer surface of the cover via the transparent resin layer,

15 wherein at least a part of the decorative layer is formed through vapor deposition of a metal material of which crystals grow in a deposition direction, thereby obtaining a predetermined design.

2. The wave-transmitting cover as claimed in claim 1, wherein the decorative layer includes a lustered piece having 20 a deposited design face formed through vapor deposition of the metal material.

25 3. The wave-transmitting cover as claimed in claim 1, wherein the metal material of which the crystals grow in the deposition direction is selected from indium, tin and gold.

4. The wave-transmitting cover as claimed in claim 1, wherein both sides of the decorative layer is covered with a first cover film layer located on a transparent resin side and
5 a second cover film layer located opposite to the transparent resin side, and

at least the first cover film is formed of a transparent resin.

10 5. A method for producing a wave-transmitting cover mounted in an opening of an exterior member of a vehicle, wherein a wave radar is disposed on a back side of the cover, comprising:

15 a film-forming step of forming a film that has a print face of a predetermined design and a deposition design face formed through vapor deposition of a metal material of which crystals grow in a deposition direction;

a shaping step of shaping the film into a predetermined shape;

20 a first molding step of disposing the shaped film in a mold and molding one of a transparent resin layer or a base layer thereon to thereby form a first molded part, and

a second molding step of forming the other of the transparent resin layer or the base layer on a surface of the first molded part where the film is provided.

6. A method for producing a wave-transmitting cover mounted in an opening of an exterior member of a vehicle, wherein a wave radar is disposed on a back side of the cover, comprising:

5 a film-forming step of forming a film that has a print face of a predetermined design and a deposition design face formed through vapor deposition of a metal material of which crystals grow in a deposition direction;

10 a shaping step of shaping the film into a predetermined shape;

15 a first molding step of forming a first molded part by disposing the shaped film in a mold, forming a transparent resin layer or a base layer on the print face of the film, and removing the film so as to transfer the print face and the deposition design face on a transferred face of the first molded part;

20 and

25 a second molding step of forming the other of the transparent resin layer or the base layer on the transferred face of the first molded part.

20 7. A method for producing a wave-transmitting cover mounted in an opening of an exterior member of a vehicle, wherein a wave radar is disposed on a back side of the cover, comprising:

25 a film-forming step of forming a film having a print face of a predetermined design and forming a lustered piece having a deposition design face formed through vapor deposition

of a metal material of which crystals grow in a deposition direction;

a shaping step of shaping the film into a predetermined shape;

5 a first molding step of disposing the shaped film with the lustered piece thereon in a mold and molding one of a transparent resin layer or a base layer on the shaped film to thereby form a first molded part; and

10 a second molding step of forming the other of the transparent resin layer or the base layer on a surface on which the film is disposed.

8. A method for producing a wave-transmitting cover mounted in an opening of an exterior member of a vehicle, wherein a 15 wave radar is disposed on a back side of the cover, comprising:

a film-forming step of forming a film that has a deposition design face formed through vapor deposition of a metal material of which crystals grow in a deposition direction;

20 a shaping and molding step of molding a transparent resin layer or a base layer in a mold, forming a deposition design face of a predetermined design on a surface of the transparent resin layer or the base layer, disposing the deposition design face of the film facing to the transparent resin layer or the base layer in the mold so as to shape a surface of the transparent 25 resin layer or the base layer to a predetermined shape and

removing the film to thereby form a first molded part that has the deposition design face transferred thereon from the film; and

5 a second molding step of forming the other of the transparent resin layer or the base layer on the transfer face of the first molded part.

9. The method for producing a wave-transmitting cover as claimed in claim 7, wherein both of opposite surfaces of the 10 film and the lustered piece are covered with a first cover film layer located on a transparent resin layer side and a second over film layer located opposite to the transparent resin layer side in the film-forming step, and at least the first cover film layer is formed of a transparent resin.

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10. The method for producing a wave-transmitting cover as claimed in claim 5, wherein the film is shaped in a mode of vacuum forming or pressure forming in the shaping step.

20 11. The method for producing a wave-transmitting cover as claimed in claim 6, wherein the film is shaped in a mode of vacuum forming or pressure forming in the shaping step.

25 12. The method for producing a wave-transmitting cover as claimed in claim 7, wherein the film is shaped in a mode of

vacuum forming or pressure forming in the shaping step.

13. The method for producing a wave-transmitting cover as
claimed in claim 8, wherein the film is shaped in a mode of
5 vacuum forming or pressure forming in the shaping and molding
step.

14. The method for producing a wave-transmitting cover as
claimed in claim 5, wherein any one of the split molds used
10 in the first molding step or in the shaping and molding step
is used also in the second molding step and
the transparent resin layer and the base layer are formed
in a mode of two-part molding.

15 15. The method for producing a wave-transmitting cover as
claimed in claim 6, wherein any one of the split molds used
in the first molding step or in the shaping and molding step
is used also in the second molding step and
the transparent resin layer and the base layer are formed
20 in a mode of two-part molding.

16. The method for producing a wave-transmitting cover as
claimed in claim 7, wherein any one of the split molds used
in the first molding step or in the shaping and molding step
25 is used also in the second molding step and

the transparent resin layer and the base layer are formed in a mode of two-part molding.

17. The method for producing a wave-transmitting cover as
5 claimed in claim 8, wherein any one of the split molds used in the first molding step or in the shaping and molding step is used also in the second molding step and

the transparent resin layer and the base layer are formed in a mode of two-part molding.

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18. The method for producing a wave-transmitting cover as claimed in claim 5, wherein the metal material of which the crystals grow in the deposition direction is selected from indium, tin and gold.

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19. The method for producing a wave-transmitting cover as claimed in claim 6, wherein the metal material of which the crystals grow in the deposition direction is selected from indium, tin and gold.

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20. The method for producing a wave-transmitting cover as claimed in claim 7, wherein the metal material of which the crystals grow in the deposition direction is selected from indium, tin and gold.

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21. The method for producing a wave-transmitting cover as claimed in claim 8, wherein the metal material of which the crystals grow in the deposition direction is selected from indium, tin and gold.

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22. A method for producing a wave-transmitting cover mounted in an opening of a front grille of a vehicle provided with fin portions, wherein a wave radar is disposed on a back side of the cover, comprising the steps of:

10 a first step of forming a base layer having projections formed in a shape corresponding to the fin portions;
a second step of forming a decorative layer on the projections so that dummy fin portions are formed; and
a third step of potting a surface on which the decorative
15 layer is formed with a transparent resin.

23. A method for producing a wave-transmitting cover mounted in an opening of a front grille of a vehicle provided with fin portions, wherein a wave radar is disposed on a back side of the cover, comprising the steps of:

20 a first step of forming a transparent layer having recesses formed in a shape complementary to the fin portions with a transparent resin;
a second step of forming a decorative layer on the recesses
25 so that dummy fin portions are formed; and

a third step of potting a surface on which the decorative layer is formed with another resin.

24. The method for producing a wave-transmitting cover
5 according to claim 22, wherein the decorative layer is provided
with a metal film formed by vapor deposition.

25. The method for producing a wave-transmitting cover
according to claim 23, wherein the decorative layer is provided
10 with a metal film formed by vapor deposition.

26. The method for producing a wave-transmitting cover
according to claim 22, further comprising a fourth step of
black-painting the whole area except the dummy fin portions
15 in the surface on which the decorative layer is formed.

27. The method for producing a wave-transmitting cover
according to claim 23, further comprising a fourth step of
black-painting the whole area except the dummy fin portions
20 in the surface on which the decorative layer is formed.